Types of synonymic groups in Russian

Vadim Belov
Cherepovets State University, Russia

Submitted: 29.04.2014.
Accepted: 24.11.2014.

Abstract

This research has two main purposes:
1) to distinguish structural types of synonymic groups;
2) to verify the headwords of synonymic groups as a linguistic or psycholinguistic concept.

Typically, a headword has: 1) common semantic elements, 2) the highest frequency, and 3) no stylistic and emotional connotations.

The main source of data is the results of two experiments and data from the Russian National Corpus. The subjects' task was to choose the main words of the submitted groups. We used 32 synonymic groups, taken from the Russian synonymic dictionaries: the first experiment contained 12 synonymic groups and the second had 20 synonymic groups. Forty-five subjects participated in the first experiment, 67 in the second experiment.

We distinguished two types of synonymic groups with different structures. The first type (centric synonymic groups) consists of synonymic groups, the headword of which can be uniquely identified by experimental and corpus data. In such cases, the subjects unanimously determined the headword, and the headword is the most frequent word of the synonymic group. There are eight (67%) such groups in the first experiment and 14 such groups (70%) in the second experiment.

The second type (non-centric synonymic groups) includes synonymic groups, in which the subjects were not able to choose the main word of the synonymic groups. There are four (33%) such groups in the first experiment and six such groups (30%) in the second experiment.

It is impossible to distinguish the headword in non-centric synonymic groups. Such synonymic groups are integrated by a semantic gestalt based on a nonverbal semantic

code. Formal and component analysis of non-central synonymic groups is not effective.

Keywords: Russian language, synonymic groups

Introduction

Synonymy is a problem that is widely discussed in linguistic and philosophic studies because it has an important theoretical and applied relevance. Although synonyms have been studied by people from the days of Aristotle's "Rhetoric" to present-day scholars, synonymy still provides controversial issues that need further analysis.
This phenomenon is connected with semantic relations in language. Synonymy can be found in levels that deal with semantic relations, specifically in lexical (words and lexical phases), morphological (affixes) and syntactic levels (propositions and sentences).

This paper focuses only on lexical synonymy. Lexical synonyms are named words (or phases) that have the same or similar meanings.

There are many definitions of synonymy, but most of them say that synonymic items have something similar in their meanings: "It is customary to call items having these special similarity synonyms" [3, 265].

Having analyzed linguistic literature, we chose four principal semantic approaches. These approaches try to define the nature of synonymy.

1) Synonyms are words denoting one real thing such as '*lug*' and '*earlap*' for *'ear'*. These words denote one real thing but they have different linguistic forms. This approach is the most effective for distinguishing stylistic synonyms.

2) Synonyms are words or expressions that have the same or similar meanings. "Synonymy is held to be sameness of meaning of different expressions" [5, 11]. In other words, synonyms must have the same or similar meanings, but in a pragmatic view it is difficult to precisely determine their semantic identity and similarity. Moreover, synonyms have "the same sense in a given context" [7, 10].

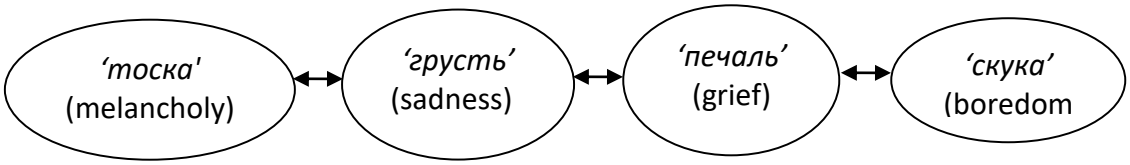
3) Synonyms are interchangeable in utterances: "Two words are synonyms if they can be used interchangeably in all sentence contexts' [Jackson 1988: 66]. Interchangeability has a great practical relevance because speakers most often use synonyms as replacements for other words in a sentence. But this approach does not consider the communicative and stylistic nuances of word and sentence meanings.
4) Synonyms have identical semantic and grammatical features. In J. Apresjan's view, synonyms (1) have the same definition, (2) have the same set of syntactic valencies, (2) are capable of replacing one another in any schemes of syntactic trees [1].
Defining words, J. Apresjan uses a special semantic language. In this language there is no polysemy, and it cannot define all language units. These formal (semantic and

grammatical) features are typical for absolute synonyms. However, there are not many absolute synonyms in the language but a huge number of near-synonyms.
Typically synonyms are integrated into synonymic groups. In essence all dictionaries of synonyms are lists of synonymic groups.

The members of a synonymic group have common semantic elements. For example, the synonymic group '*врач'* (doctor) – '*доктор'* (doctor) – *'медик'* (medical man) – '*лекарь'* (medico)' has an integrated semantic feature '*medic profession'*. In dictionaries of synonyms the integrated semantic feature is expressed by a headword. According to *The Oxford Thesaurus: An A-Z Dictionary of Synonyms*, "headwords have been selected because of their frequency in the language" [14, 3]. Although frequency in the language is not a primary factor in the selection of headwords: "some headwords of lower frequency have been included because it would otherwise be impossible to find a suitable place to group together what are perceived as useful sets of synonyms" [14]. Headwords usually have no stylistic or emotional connotations.

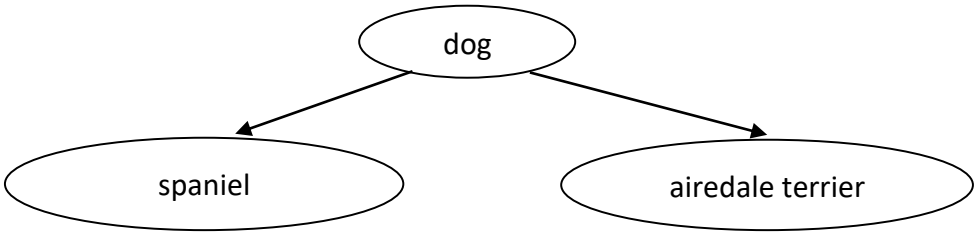
The traditional point of view considers that synonymy is a symmetrical semantic relation, and it differs from hyponymy (taxonomy).
G. Miller's paper [9] is the first step toward making an online lexical reference system, WordNet, whose design is inspired by psycholinguistic approaches of human lexical memory. It was obvious that the inner lexical memory differs from standard alphabetical dictionaries: "The most ambitious feature of WordNet, however, is its attempt to organize lexical information in terms of word meanings, rather than word forms" [9, 237]. WordNet is organized by semantic relations. And synonyms have the central rule in WordNet. According to Miller synonyms can be interchangeable and have symmetrical relations: "It is convenient to assume that the relation is symmetrical: if *x* is similar to *y*, then *y* is equally similar to *x*" [9, 241].
We can show semantic relations between symmetrical synonyms using the following examples:

Figure 1. Synonymic relation



At the same time, hyponyms and hyperonyms have a hierarchical (asymmetrical) structure: "These terms both refer to the relationship of semantic inclusion that holds between a more general term" [4, 82]. A hierarchical structure of hyponyms and hyperonyms is named 'taxonomy'.
Writing about taxonomy, A. Cruse [3] has distinguished two types of relations. He called the first type 'is a kind/type of '; the second type – 'is a' relation. Cruse said that only the first type is taxonomy. For example, *spaniel* is taxonym of *dog* because it is normal to say: *A spaniel is a kind of dog*. But *kitten* and *cat* do not have a taxonomy relation: we cannot say: *A kitten is a type of cat*.
The following attempts to demonstrate semantic relations between hyponyms:

Figure 2. Taxonomy relation



Nevertheless, some research considers synonymy to be both a symmetrical and asymmetrical relationship. For example, *The New Collins Thesaurus* research group (IBM T.J. Watson Research Center) has determined that 62% of synonyms are asymmetrical [2]. L. Murphy wrote that while prototypical cases of synonymy are symmetrical, in some cases synonymy appears asymmetrical [10, 158].

Hypotheses

This research on the semantic relationship among synonyms has two main purposes:
1) to distinguish structural types of synonymic groups;
2) to verify the headwords of synonymic groups as a linguistic or psycholinguistic concept.
The hypothesis is that synonymic relationships can have hierarchical and symmetrical structures.

Methodology

The sources of research data are:
1) The results of two experiments where subjects selected headwords for the submitted synonymic groups;

2) The Russian National Corpus (www.ruscorpora.ru), which is used to define the frequency of synonyms in the language;
3) The Russian Associative Dictionary by Sergey Karaulov, where associative word reactions are shown;
4) Russian dictionaries where definitions of words and sets of synonyms are given.
In the first experiment, we used 12 synonymic groups taken from several Russian dictionaries of synonyms (dictionaries by N. Abramov, V. Klueva, Z. Aleksandrova, A. Evgenjeva, J. Apresjan). Chosen synonymic groups are presented in all of these dictionaries.
Synonymic dictionaries differ by sets of synonyms and selection of group headwords.

Table 1. The synonymic group in dictionaries of synonyms

Dictionary of synonyms	**Words of the synonymic group**
New explanatory synonymic dictionary of Russian by J. Apresjan	*еда'* (food), '*снедь'* (archaic word of food), '*яства'* (archaic and high stylistic word of food), '*пища'* (food / fare)
Short dictionary of Russian synonyms by V. Klueva	*'пища* (food / fare), '*еда*' (food), '*корм'* (forage), '*харчи*' (expressive word of food), '*яства*' (archaic word of food), '*снедь'* (archaic word of food)
Dictionary of Russian synonyms by A. Evgenjeva	*'пища'* (food / fare), *'пропитание'* (subsistence), *'еда'* (food), *'съестное'* (foodstuffs), *'харчи'* (grub), *'харч'* (grub), *'жратва'* (grub), *'шамовка'* (vulgar word of food)
Dictionary of Russian synonyms and expressions with the similar meaning by N. Abramov	*'пища'* (food / fare), *'кушанье'* (meal) , *'снедь'* (archaic word of food), *'еда'* (food), *'брашно'* (archaic word of food, *'яства'* (archaic word of food), *'стол'* (board), *'харчи (харч)'* (expressive word of food), *'хлеб', 'хлеба'* (bread), etc.

Synonyms of low frequency, synonyms with connotative and emotive meanings and archaic words were deleted.

In the second experiment, we used 20 synonymic groups from the most popular dictionary by A. Evgenjeva. The selection of synonymic groups was random. We deleted low-frequency synonyms, emotive and archaic words.

Forty-five subjects participated in the first experiment and 67 in the second experiment. The subjects' task was to choose the main words of the submitted groups. Experimental instruction did not contain any rules for this operation, because it was assumed that a subject had an intuitive ability for semantic selection. However, it was possible that the subjects might not find the headword. Subjects were free to take as much time as they needed to complete the task.

Results

Having analyzed the results of the experiments, we distinguished two structural types of synonymic groups. These types differ by semantic relationship between synonyms.

The **first type** (named **centric synonymic groups**) consists of synonymic groups, the headwords of which can be uniquely identified by experimental and corpus data. In such cases, the subjects unanimously determined the headword, and the headword is the most frequent word in the synonymic group. For example, the word *'пища'* (food / fare) is the headword of the synonymic group '*пища* (food / fare) – 'еда' (food) – '*корм'* (forage)'; the word '*болезнь'* is the headword of the synonymic group '*болезнь'* (disease) – *'хворь*' (ailment) – '*недуг'* (infirmity) –'*заболевание*' (illness).

There are eight (67%) such groups in the first experiment and 14 such groups (70%) in the second experiment.
The main features of centric synonymic groups are:
1) the results of the experiments have shown that there is one leading synonymy in such groups;
2) the headwords have the highest frequency in these groups;
3) the members of the centric synonymic groups have asymmetrical associative reactions. The Russian Associative Dictionary, which contains a massive number of word reactions, has demonstrated that the headword of a centric group is the most frequent associative reaction of word-stimulus.
For example, subjects of our experiment chose the headword *'болезнь'* (disease) for the synonymic group *'болезнь'* (disease) – *'хворь'* (ailment) – *'недуг'* (infirmity) – *'заболевание'* (illness). Stimulus *'хворь'* (ailment) has following associative reactions:
a. *'болезнь'* (disease) in 141 cases of 517 reactions (27 %),
b. *'прошла'* (form of verb 'go') in 16 cases of 517 reactions (3 %),
c. *'боль'* (pain) in 15 cases of 517 reactions (3 %).
Stimulus *'недуг'* (infirmity) has the following associative reactions:

a. *болезнь'* (disease) in 121 cases of 508 reactions (24 %);
b. *'тяжёлый'* (hard / painful) in 47 cases of 508 reactions (9 %)

c. *боль'* (pain) in 15 cases of 508 reactions (3 %).

It is important to note that the headword *'болезнь'* (disease) has no associative reactions such as *'хворь'* (ailment), *'недуг'* (infirmity).

Synonymic groups can differ by their degree of asymmetry / symmetry of associative reactions. Among centric synonymic groups we can find groups that have a high degree of asymmetry (like a synonymic group *'болезнь'* (disease) – *'хворь'* (ailment) – *'недуг'* (infirmity) – *'заболевание'* (illness)) and groups with a low degree of asymmetry (like '*путь'* (way) – *'дорога*' (road) – *'стезя'* (way) – *'тропа*' (path)).
Moreover, centric synonymic groups tend to have asymmetrical associative reactions. The asymmetry of semantic distance between a stimulus word and the word associate it activates is interpreted as a reflection of the prototype-variant relationship in consciousness [15].

4) A definition test has shown that a headword can be used in the analytical definition of members of a synonymic group. For example, the word *'судьба'* (fate) is the headword of the group *'фортуна'* (fortune) – *'удел'* (destiny) – *'судьба'* (fate) – *'доля'* (lot).

The word '*судьба'* (fate) is typically used in definitions of the word *'фортуна'* (fortune). According to V. Dal's dictionary and V. Vinogradov's academic dictionary, *'фортуна'* (fortune) is '*судьба'* (fate). S. Ozhegov's dictionary has shown that the word *'удел'* (destiny) is '*судьба'* (fate). But the word '*судьба'* (fate) cannot be defined using the words *'фортуна'* (fortune) and *'удел'* (destiny). There are no definitions of '*судьба'* (fate) using words *'фортуна'* (fortune), *'удел'* (destiny) in Russian dictionaries.
Centric synonymic groups have an inner semantic structure with a headword as the centre of this hierarchic structure.

From the structural point of view, there are two elements: the headword of the synonymic group and other member of the group. They have different semantic statuses: the headword has a dominating status but the other members have a subordinate status.

The headword plays a significant role in the semantic descriptions of synonyms that have this headword. It is an important semantic element of their synonyms.
The centric synonymic-group headword seems to be a prototype (in cognitive terms) because headwords are "the clearest cases of membership defined operationally by people's judgments of goodness of membership in the category" [12, 38].

Turning to the reason why one word in the synonymic row is dominant, we should mention L. Vygotsky's theory, which holds that the main word in the semantic network is the oldest word [16]. According to Vygotsky's theory, historical linguistic development determines the semantic organization of lexical items. But in cognitive psychology and linguistics, it is argued that linguistic memory is dynamic and "evolves in accordance with a person's linguistic experience" [13]. Synonymic groups can change: it is important to distinguish the synchrony and the diachrony of synonymic groups.

The **second type** (named **non-centric synonymic groups**) includes synonymic groups in which the subjects were not able to choose the main word of the synonymic groups. The second type is illustrated by following synonymic groups: '*буря'* (storm) – *'ураган'* (hurricane) – *'метель'* (snowstorm) – *'вьюга'* (snowstorm) – *'пурга'* (blizzard); *'плут'* (trickster) – *'жулик'* (swindler) – *'похититель'* (kidnapper) – *'вор'* (thief); – '*мошенник'* (cheat). There are four (33%) such groups in the first experiment and six such groups (30%) in the second experiment.

Below we briefly list the main features of non-centric synonymic groups:
1) the subjects cannot determine the main word of groups;
2) the synonyms of non-centric synonymic have similar frequency characteristics;
3) the synonyms of this group have symmetrical associative reactions.
The basis feature of non-centric groups is the absence of hierarchical structure and the independent status of each synonym.

It is impossible to distinguish the headword in non-centric synonymic groups. The non-centric synonymic type is integrated by a semantic gestalt [8] based on a nonverbal semantic code. Nonverbal semantic codes differ from verbal units by formal variety, their continuous and unconscious nature and their ambiguous meaning. A. Paivio suggested that there are verbal and nonverbal codes and that memory performance is based on either or both of these codes: "The most general assumption in dual coding theory is that there are two classes of phenomena handled cognitively by separate subsystems, one specialized for representation and processing of information concerning nonverbal objects and events, the other specialized for dealing with language. I will often refer to the nonverbal (symbolic) subsystem as the imagery system because its critical functions include the analysis of scenes and the generation of the mental images" [11, 53]. In the Russian psycholinguistic tradition, L. Vygotsky's and his colleague N. Ginkin's ideas that there are oral speech and thought language are well known [16].

It seems nonverbal codes have a significant role in the meanings of non-centric group synonyms: an integrated base of their synonyms is non-discrete semantic elements

like pictures, images and circuitries. Their nonverbal code can not be analyzed by logic, component methods. Thus, formal and component analysis of non-central synonymic groups is not effective because there are no common discrete semantic elements.

Conclusion

Our research has shown that most of synonymic groups have hierarchical structure. It is clear to see that the symmetrical organization is not a prototypical case for synonymy.

In conclusion we resume our research results:
1). There are two types of synonymic groups. The groups differ by their inner semantic organization.
2). Centric synonymic groups have a hierarchical organization and non-centric synonymic groups have a symmetrical organization.
3). Symmetrical organization cannot be a differential feature of synonymy. Most synonymic groups have a hierarchical (asymmetrical) structure.
4). Synonymic relationships can be hierarchical and symmetrical.
5). Only centric synonymic groups have headwords. It is impossible to define the headword of non-centric synonymic groups.

References

Apresjan, J. (1973) Synonymy and Synonym In Kiefer, F. (ed.), *Trends in Soviet Theoretical Linguistics*. Dordrecht: Reidel. pp. 173-200.

Chodorow M., Ravin Y., Sachar H. A (1988) Tool For Investigating Tile Synonymy Relation In *A Sense Disambiguated Thesaurus In Applied Natural Language Processing Conference*. pp. 144-151.

Cruse A. (1986) *Lexical semantics*. Cambridge.

Geeraerts D. (2010) *Theories of lexical semantics*. Oxford.

Harris R. (1973) *Synonymy and Linguistic Analysis*. Oxford.

Jackson, H. (1988) *Words and Their Meaning*. London.

Kreidler, C. W. (1998) *Introducing English semantics*. London: Routledge.

Lakoff J. (1977) Linguistic Gestalts In Beach W.A., Fox S.E., Philosoph S. (eds.), *Thirteenth Regional Meeting of the Chicago Linguistics Society, April 14-16,*. pp. 236-287.

Miller, G., Beckwith R., Fellbaum C., Gross D., Miller K. Introduction to WordNet: An On-line Lexical Database In International Journal of Lexicography. – 1990. -№ 3(4) — p. 235-244.

Murphy L. (2003) *Semantic Relation and the Lexicon*. Cambridge.

Pavio A. (1990) *Mental representation. A Dual Coding Approach*. Oxford.

Rosch E. (1978) Principles of Categorization In E. Rosch, B. Lloyd (eds.) *Cognition and Categorization*. Hillsdale. – pp. 27–48.

Taylor J. (2003) *Cognitive Grammar*. Oxford.

The Oxford Thesaurus: An A-Z Dictionary of Synonyms (1991). Oxford.

Tversky, A. (2005) *Preference, Belief, and Similarity.* Selected Writings. Cambridge, London.

Vygotsky L. (1962) *Thinking and Speech*. The M.I.T. Press.

Wittgenstein L. (1986) *Philosophical Investigations*. Oxford.